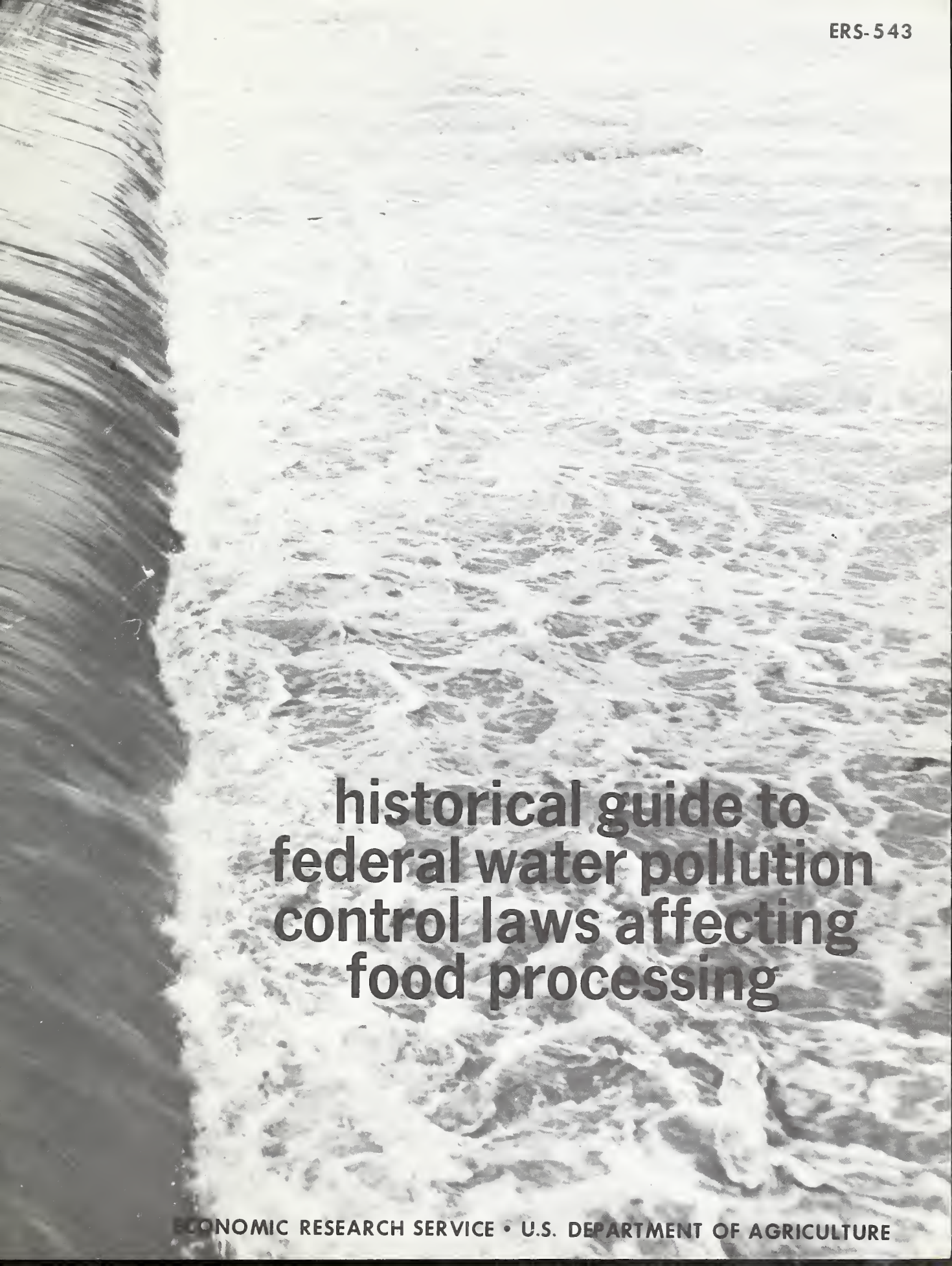
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historical guide to federal water pollution control laws affecting food processing

ECONOMIC RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE

ABSTRACT

The evolution of Federal water pollution control legislation and the objectives and provisions of current legislation relevant to food processing are explained. Federal strategy concerning "point source" water pollution has shifted from sponsoring grant-in-aid programs and self-denial of enforcement powers to establishing effluent limitations and discharge permits. Under the Federal Water Pollution Control Act Amendments of 1972, effluents discharged into navigable waters must meet "best practicable" standards by July 1, 1977, and "best available" standards by July 1, 1983.

Key Words: Water pollution, Federal legislation, food processing

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SUMMARY

Food processors must understand regulations regarding water pollution, because of the high volume of wastewater their facilities discharge and its high organic content. However, clean water legislation is still evolving. To aid understanding, this report explains the history of Federal water pollution control policies and discusses the provisions of recent legislation.

The role of the Federal Government in abating water pollution has undergone several changes in recent decades. The Federal strategy, set after World War II, emphasized financial support for the construction of municipal treatment plants and research programs, leaving enforcement to State agencies. However, because of a steady decline in water quality, a new policy characterized by a strong assertion of Federal interests evolved. The Federal Water Pollution Control Act Amendments of 1972 direct the Environmental Protection Agency (EPA) to establish effluent limitations, issue industrial and municipal discharge permits, and specify a timetable for cleaning up our waters.

Under the 1972 Amendments, uniform effluent limitations will be applied at each identifiable point from which pollutants are discharged. Industries are to have their effluent levels consistent with "best practicable" and "best available" control technologies, not later than July 1, 1977, and July 1, 1983, respectively. Plants discharging to municipal facilities will be required to satisfy pretreatment standards and pay a prorated share of municipal capital and operating costs. Discharge of pollutants without an EPA approved permit will be unlawful after December 31, 1974.

There is general agreement that water must be managed as a common property resource. The objective of Government intervention is to balance the costs paid by industry to reduce water pollution with the benefits to the public of a cleaner environment. The 1972 law aims to accomplish this by imposing effluent limitations and discharge permits, promoting areawide waste treatment management planning, and providing Federal assistance for the construction of municipal treatment plants.

HISTORICAL GUIDE TO FEDERAL WATER POLLUTION CONTROL LAWS AFFECTING FOOD PROCESSING *

by

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INTRODUCTION

Pollution is an inherent part of man's economic activity. Without public action we will allocate too many resources to production and consumption, and too few resources to maintaining and improving the environment. Our natural environment must be viewed as a common property resource to be developed, used, and conserved in a manner consistent with the needs and desires of the country as a whole.

In fiscal years 1973 and 1974, the Federal Government will spend at least $5.4 billion on environmental programs: research and development and financial assistance to local communities for construction of waste treatment plants. Even so, most of the cost of cleaning up our Nation's streams, rivers, and lakes will be absorbed by private industry. A recent study of 141 poultry processing plants revealed that an average investment per plant ranging from $149,000 to $424,000 is required to achieve levels of effluent limitation proposed for 1983 (8, pp. 36-41). In addition to the initial investment outlay, increases in annual operating and maintenance costs ranging from 1.6 to 5.9 percent are indicated. The cost of pollution control in the fruit and vegetable processing industry (canning and freezing) is projected to reach $21.3 million by 1976, adding 1.4 to 2.3 percent to retail fruit and vegetable prices (2, p. 16). Because of tougher pollution regulations, about 100 processing plants employing 7,000 people may be forced to shut down.

Although industry is being confronted with the challenge of cleaning up the water, it is understandable that many members of the food processing industry are not familiar with the Federal Government's role in establishing, administering, and enforcing water pollution control programs. Over the past 20 years, Federal authorities have provided funds to municipalities and industry for pollution abatement, sponsored research, interacted with State agencies to establish ambient water quality standards, and recently engaged in limited enforcement action against individual waste dischargers. The movement of Federal administrative authority from one agency to another, recent court decisions stalling the Army Corps of Engineers' permit program, and pending ceilings on effluents called for by the 1972 water pollution control bill have further complicated the picture.

* The author acknowledges the helpful comments of Beatrice H. Holmes in interpreting the relevant laws.

Hopefully, the following guide to the development of Federal water pollution programs and the objectives and provisions of current legislation will help food processing and other affected industries to understand their emerging role in cleaning up our waters.

FEDERAL LEGISLATION BEGINS

The Federal Government first asserted an interest in certain aspects of water pollution control in a statute passed in 1886 to control the dumping of refuse in New York Harbor. In 1899, the Rivers and Harbors Act was enacted prohibiting the discharge of waste materials into any navigable waterway, without first obtaining a permit from the Army Corps of Engineers. Of course, the primary objective of the initial legislation was to protect ships against floating obstructions, rather than to regulate water quality.

At the beginning of the 20th century, scientists directed their research efforts toward control of illnesses caused by an unsanitary environment. To deal with water pollution as a factor in the spread of communicable diseases, the Public Health Service Act of 1912 called for the adoption of nationwide standards for the treatment of drinking water, improved methods of sewage disposal, and greater public education. The Public Health Service Act also established a framework of Federal-State cooperation which has prevailed since.

Until 1948, legal authority to enforce water pollution controls belonged exclusively to the States and localities. In almost all States, jurisdiction gradually passed from the local to the State level as it became apparent that the localities which suffered the effects of pollution were unable to control upstream sources. Because of the drastic increase in water pollution which accompanied the rapid growth of wartime industry, the Water Pollution Control Act of 1948 was signed by President Truman on June 30, 1948. Major Federal laws passed between 1948 and 1970 are presented in table 1.

The 1948 law formalized the "traditional approach" to pollution control in the United States by providing for Federal financial support in the form of loans for constructing treatment plants, and acknowledging that the States had primary responsibility for enforcement of pollution regulations. The U. S. Attorney General was given authority to bring suit against polluters of interstate waters, "but only after affording the State in which the pollution originated a reasonable time to take action against the polluter and then only with the State's permission" (6, p. 59).

The 1948 Act was extended through 1956. Since the mid-1950's, the framework for pollution control has been increasingly determined by Federal legislation. In 1956, the Water Pollution Control Act Amendments established the first permanent Federal authority in water pollution, expanded the grant program for treatment plant construction, and strengthened Federal enforcement. Under the 1956 Amendments, Federal enforcement was achieved via a three-step mechanism. A conference was convened among the interested parties, followed by a public hearing if the conference did not result in action within 6 months. After another 6-month waiting period the case could be taken to court. The necessity of obtaining State consent before initiating Federal court action represented the greatest obstacle to effective enforcement.

Table 1--Major Federal water pollution control legislation, 1948-70

Date	Title	Enforcement	Major provisions and financial aid	Other
1948	Water pollution Control Act (P.L. 80-845)	Dependent on States	Loans for treatment plant construction	Temporary authority
1956	Water Pollution Control Act Amendments (P.L. 84-660)	Conference hearing, court action process for interstate waters	Grants for treatment plant construction, $50 million annually	Permanent authority
1961	No title (P.L. 87-88)	Federal jurisdiction extended to navigable waters	Auth. of $80 mil. in 1962, $90 mil. in 1963, and $100 mil. annually in 1964-67	Research on municipal treatment. Seven field laboratories established
1965	Water Quality Act (P.L. 89-234)	Federal-State standard setting	Auth. of $150 mil. in 1966 and 1967	Project grants for research on combined sewers
1966	Clean Water Restoration Act (P.L. 89-753)	Responsibility for oil pollution act transferred to Sec. of Interior	Auth. of $450 mil. in 1968, $700 mil. in 1969, $1 bil. in 1970, $1.25 bil. in 1971	Project grants for research on advanced waste treatment and industrial wastes
1970	Water Quality Improvement Act (P.L. 91-224)	Extended Federal jurisdiction to offshore facilities and vessels in the "contiguous zone."	Aimed at dealing with oil spills	Created the Office of Environmental Quality

Source: J. C. Davies, The Politics of Pollution, Pegasus, New York, 1970, p. 42.

Environmental Quality, the third annual report of The Council of Environmental Quality, August 1972, pp. 119-22.

In 1961, the Congress again amended the Water Pollution Control Act, increasing funds for the grant program and extending the reach of Federal abatement authority from "interstate waters" to include all "navigable waters." However, public dissatisfaction with the pace of pollution control continued to grow. Chief concerns were that the States were not doing an adequate job, and that the U.S. Public Health Service--responsible for administering the Water Pollution Control Act---was not effective in obtaining State action (1. p. 40).

The Water Quality Act of 1965, passed after prolonged debate, addressed these concerns. It transferred Federal authority from the Public Health Service to a new Federal Water Pollution Control Administration (FWPCA) within the Department of Health, Education, and Welfare (HEW), and to create a system of Federal-State enforcement based on ambient water quality standards for interstate waters. 1/ Each State was required to establish water quality standards for its interstate waters before June 30, 1967. The standards specified uses for various parts of a river or stream and describe the chemical and biological characteristics consistent with the uses. Each State also was required to adopt an implementation schedule, describing the actions that must be taken by both municipalities and industrial firms along a river to meet the water quality standards. Both the standards and implementation schedules were subject to approval by the Secretary of HEW, and he had authority to establish standards and schedules for States which failed to act by the deadline. The bill doubled the ceiling for individual waste treatment grants, and initiated a new demonstration program to deal with the problem of combined storm and sanitary sewer systems.

The Water Quality Act of 1965 was the earliest assertion of Federal leadership in the antipollution effort and included the first timetable for the establishment of environmental standards.

Early in 1966, the newly created FWPCA was transferred from HEW to the Department of Interior, in order to consolidate administrative responsibility for Federal water programs in a single agency. In 1966, the Johnson Administration also submitted legislation designed to put control of water pollution on a regional basis. The proposed scheme called for regional agencies to develop comprehensive plans for pollution control, to set and enforce standards, and construct the necessary treatment plants. A rewritten version of the bill--the 1966 Clean Water Restoration Act--eventually passed, but major incentives to establish basin-wide regional agencies were removed. However, the Act continued the trend of increasing construction grant authorizations, added several research and training programs, and extended Federal jurisdiction over enforcement to international boundary waters.

The Water Quality Improvement Act of 1970 deals primarily with oil, vessel, and thermal pollution, acid mine drainage, and eutrophication. This Act is not expected to have much impact on food processors. However, it does require

1/ The standards are described as ambient because they refer to the quality of water in a stream rather than the quality of waste water as it emerges from a particular point of discharge.

an applicant for a Federal license or permit to obtain a certificate from the appropriate State agency certifying that the activity to be carried out under the license will not violate Federal-State water quality standards.

In 1970, the FWPCA was transferred from the Department of Interior to the newly formed Environmental Protection Agency (EPA) in a further consolidation of Federal environmental programs. This reflected an increasing awareness of the national scope of environmental problems and the failure of the "traditional approach" to water pollution control.

FEDERAL PROGRAMS IN THE 1970's

The National Environmental Policy Act (NEPA) was signed into law by President Nixon, January 1, 1970. The objective of this law is to establish a national policy for the environment and make the Federal Government a central participant in environmental renewal. NEPA also called for the creation of a Council on Environmental Quality, and required the President to submit an annual report to the Congress on the state of the environment..

Initial EPA efforts to control water pollution began under the Federal Water Pollution Acts of 1956 and 1965. The legislation provided two alternatives for Federal enforcement of ambient water quality standards. The first was the cumbersome three-step mechanism described above. This approach was used primarily to call attention to complex and longstanding pollution problems. Usually, 12 or 13 conferences were held each year. Second, EPA was given authority to issue 180-day notices identifying particular sources of pollution and ordering appropriate cleanup. If the alleged violator did not comply within 180 days, court action was initiated. In the first 9 months of fiscal year 1972, EPA served these notices to 56 municipalities and 26 private firms. Compared with earlier years, this represented a significant increase in enforcement activity. 2/

Because of declining water quality, 3/ a third control effort was initiated under the Rivers and Harbor Act of 1899 (also called the Refuse Act). In 1970, EPA began enforcing the permit program to provide a swift means of taking action against individual polluters. To obtain a discharge permit from the Army Corps of Engineers, an individual polluter was required to specify the type and amount of effluent he intended to discharge. If the effluent did not meet applicable water quality standards, an abatement plan and compliance schedule was to be

2/ The effectiveness of industrial enforcement was hampered because EPA did not have authority to enter plants, or to require disclosure of the characteristics and volume of effluents.

3/ An EPA study covering the period, 1957-68, shows that the reduction in pollution from municipal sources as a result of the construction of new waste treatment plants was more than offset by increases in industrial pollution. The biochemical oxygen demand load of our waterways increased by 10 percent and the discharge of plant nutrients more than doubled (7, p. 377).

submitted. As of July 1, 1972, of more than 20,000 permit applications received only 2,559 applications had been processed by the Corps, received by EPA, and referred to appropriate State agencies for certification.

During the first half of fiscal 1972, 81 criminal actions and 52 civil suits were filed under the Refuse Act. Also, 130 convictions were obtained and 17 settlements reached, primarily in cases that were initiated in previous years.

Issuing of permits and enforcement under the Refuse Act has been brought to a halt by two recent court orders. In the case of Kalur v. Resor, December 21, 1971, the U.S. District Court for the District of Columbia enjoined further granting of permits until the Corps of Engineers' regulations were amended to require environmental impact statements 4/, and ruled that permits could not be issued for discharges into non-navigable tributaries of navigable water. This was followed in May 1972 by a Third Circuit Court of Appeals ruling in the case of U.S. v. Pennsylvania Industrial Chemical Corporation (PICCO) that the company could not be held criminally responsible under the Refuse Act for discharges prior to the existence of a Federal permit program. Since permits were not currently available, due to Kalur v. Resor, the PICCO decision appeared to bar the prosecution of current polluters. In order to resolve the issues, the Department of Justice appealed the Kalur case and asked for a rehearing in the PICCO case.

Recognizing the need for stronger Federal regulation, both Congress and the Administration began working on new legislation late in 1971. Nearly a year later, after rejection of an Administration bill by Congress, veto of a Congressional proposal, and subsequent override of the veto, the Federal Water Pollution Control Act Amendments became law.

To help meet stricter pollution controls, the law authorizes $24.6 billion to be spent over the next 3 years. Approximately $18 billion is earmarked for 75 percent Federal grants to municipalities to construct sewage treatment plants, $5.6 billion to reimburse municipalities that have built plants in anticipation of the new program, and $800 million for 3-percent interest loans to industry.

The 1972 Act is unique because it establishes a program based on EPA effluent limitations and discharge permits, and specifies a timetable for implementation. Several provisions are likely to have a significant impact on food processors.

Effluent limitation guidelines will be developed based on the recommendations of a select 9-man, Effluent Standards and Water Quality Information Advisory Committee. The guidelines, which EPA was directed to publish before October 18, 1973, shall specify the chemical, physical, and biological characteristics of pollutants required to meet "best practicable" and "best available" standards. Based on the guidelines EPA will issue effluent limitations and

4/ Subsection 102(2) (c) of NEPA requires the initiating agency to prepare a detailed statement of the environmental impact for all major Federal actions significantly affecting the quality of human environment.

specify dates for compliance, not later than July 1, 1977, and July 1, 1983. All "new sources" (facilities begun after January 16, 1974) and old facilities which undergo major modification must comply immediately with the "best available demonstrated control technology."

In developing effluent limitations, EPA is required to consider "...the total cost of application of technology in relation to the effluent reduction benefits to be achieved...and shall also take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, and non-water quality environmental impact (including energy requirements)" (Section 304 (b) (1) (B), Pub. L. No. 92-500). "Best practicable" standards are likely to emphasize control technology based on end-of-the-line treatment, while "best available" standards will require new in-process control technology as well as out-fall cleanup.

For municipal wastes, the law calls for the development of guidelines describing effluent reductions attainable through the application of secondary treatment, within 60 days of enactment. Industrial polluters who discharge to municipal facilities will be subject to pretreatment regulations. EPA was required to adopt pretreatment standards by August 15, 1973, to become effective within 3 years. The purpose of pretreatment standards is "...to prevent the discharge of any pollutant which interferes with, passes through, or otherwise is incompatible with such works" (Section 304 (f) (1)).

In addition to imposing pretreatment standards, an attempt is made to assure that industrial sources using municipal facilities pay their share of treatment costs. The law specifies that EPA will not approve grants for municipal facilities unless the applicant has adopted a system of user charges covering the industrial users' share of operating and maintenance costs (including replacement). Also, industrial users are required to pay a prorated portion of the cost of constructing the facility.

Discharge of pollutants without an EPA approved permit will be unlawful after December 31, 1974. Administration of the permit program is to be in the hands of the States. However, EPA is given authority to veto the entire program of a State if it is not properly administered and enforced. Discharge permits will no longer be issued under the Refuse Act. However, pending applications will be handled as permit applications under the 1972 Act. Existing Federal-State water quality standards remain in effect. Dischargers will be required to comply with the more stringent requirements of either effluent limitations or water quality standards.

To aid in the development of effluent limitations and enforcement, the Congress has given EPA authority to require the owner of any "point source" to establish and maintain records, install and use monitoring equipment, and make reports as requested. If a State fails to initiate appropriate enforcement action within 30 days of an alleged violation, "...the Administrator (EPA) shall enforce any permit condition or limitation; (a) by issuing an order to comply...., or (b) by bringing a civil action..." (Section 309 (a) (1)).

Any person who violates a compliance order is subject to a civil penalty not to exceed $10,000 per day. Persons found guilty in an EPA civil action of knowingly violating a provision of the Act are subject to a fine of not less than $2,500 nor more than $25,000 per day, or imprisonment for not more than 1 year, or both. Also, after July 1, 1973, any citizen 5/ may commence civil action against an alleged violator, or against the EPA Administrator for failure to perform his duty. A citizen's suit must be preceded by a "notice of alleged violation" and a 60-day waiting period. 6/

The preceding discussion, which is intended to indicate the direction of Federal policy, covers only the highlights of the 1972 law. For example, special provisions for implementing effluent standards for toxic pollutants and ocean discharge are included. Also, emphasis is placed upon the development of areawide waste treatment management plans. The States are directed to play a leading role in drawing up areawide plans, estimating municipal and industrial waste treatment needs, and establishing priorities for construction of treatment facilities over a 20-year period.

The 1972 law authorized $5 billion for construction grants in fiscal 1973 and $6 billion for fiscal 1974. However, municipal construction grants are limited to $2 billion for fiscal 1973 and $3 billion for fiscal 1974 under the current budget.

IMPLICATIONS OF FEDERAL POLICY

At the root of the water pollution problem is the fact that water, a commonly owned resource with positive marginal opportunity costs, carries a zero marginal user charge for waste disposal. The task of the policymaker is to provide the pricing mechanism and institutions needed to allocate our common property resources in a manner consistent with the needs and desires of the community.

The enforcement of effluent limitations imputes a "price" to the use of water as a waste disposal medium. For example, suppose the discharge of a toxic pollutant is prohibited, then the effective price of water for disposal of the toxic pollutant is infinite. It may be argued that uniform effluent limitations are equitable, in the sense that each firm must remove a given perdentage of pollutant per unit of raw input processed. But there is no guarantee than the Nation obtains an "efficient" (i.e., least-cost) clean-up and once the individual firm has attained the discharge standard it has no incentive to cut pollution further. To help remedy these problems some economists have suggested

5/ The term "citizen" is defined as "a person or persons having an interest which is or may be adversely affected" (Section 505 (g)).

6/ The waiting period is waived in the case of toxic pollutants and effluents from "new sources."

levying an effluent tax on each unit of pollutant released. Under the taxation approach each firm removes pollution up to the point where the additional cost of removing a unit of pollution equals the effluent tax and is the same for every firm. Society obtains "efficient" pollution control (i.e., a given level of cleanup is produced using a minimum resource input), and the individual firm has a continuing incentive to find less costly ways of reducing its pollutant discharge in order to lower its tax burden. However, it may be difficult to determine the effluent tax required to give the socially "desired" level of pollution control. Also, it may be argued that we should place less emphasis on efficiency and give more attention to the distribution of benefits and costs associated with regulation.

The institutional framework through which our water pollution policy is to be implemented involves strong Federal initiative, originating with EPA, and Federal-State cooperation. The task of balancing the interests of industrial polluters, usually associated with well organized political and economic forces, against the interests of the large and diffuse public affected by pollution provides a major challenge. Our institutions also need to be consistent with the fact that several management strategies (e.g., low-flow augmentation and instream reaeration) require planning at the regional or the river basin level. The 1972 legislation states that "...it is national policy that areawide waste treatment management planning processes be developed" and emphasizes the importance of coordinating the construction of municipal and private waste treatment facilities (Section 101 (a) (5)).

The Federal Government has subsidized industrial pollution control in at least two respects. In the past, those firms able to utilize municipal treatment have benefited as a result of Federal grants for municipal plant construction. To the extent that firms have avoided paying the full cost of pollution control, we have tended to discourage a shift to products with lower environmental cost. Specific provisions of the new legislation are aimed at assuring that industrial users pay their share of the capital and operating costs of municipal plants. Also, to encourage private investment in pollution control facilities, firms are allowed to partially offset their initial investment by using either rapid amortization or an investment tax credit to reduce their tax burden. Unfortunately, tax write-offs are of relatively little help to those marginal firms that are most likely to shut down because of pollution controls.

The food processing industry faces a variety of special problems. For example, wasteloads tend to vary widely due to raw input maturity, type of processing equipment, product style, and season. Wasteload variability affects the optimum size and efficiency of treatment facilities, and increases the difficulty of meeting pretreatment standards and effluent limitations. It will be to the food processor's advantage to consider in-field, preprocessing operations that leave soil and organic material in the growing field and minimize problems caused by concentrating wastes at the processing plant. Also, more attention should be given to inplant controls that allow dry handling of wastes and reduce water requirements.

Undoubtedly, some firms will be unable to invest in pollution abatement technology or use municipal treatment facilities, and will be forced to shut down. In regions where favorable employment alternatives are not available, community economic activity will contract. In such cases, the socio-economic

interdependencies that exist between the food processor, local agriculture, their suppliers, and the community will become painfully evident.

Americans have decided that our environment must be "cleaned up." EPA effluent limitations and discharge permits have been selected as the primary tools to reduce water pollution. The role of Federal water pollution programs is to assist in locating the point at which the costs to society of cleaning up pollution equal the benefits of a cleaner environment. The adverse economic impacts of pollution control can be minimized if water is treated as a common property resource and managed with areawide planning, complemented by Federal assistance for the construction of municipal treatment facilities and the development of pollution abatement technology.

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